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THE JOURNAL OF PHILOSOPHY

SCIENCE AND THE FOUNDATIONS OF FREEDOM

I

FREEDOM is understood here naturalistically as the individual's participation in the bio-social forces which shape his destiny. But the individual's social (and cultural) environment affords the only area in which he can find a leverage. Even where directly instituted biological changes are relevant, as in dietetics and therapeutics, environmental changes must obviously be employed to bring these about; and the ideas which guide them are produced and sustained in the cultural area. However, the task of self-development is a coöperative, social undertaking which always involves the development of other individuals. Accordingly, the eugenic factor is also relevant. But until social controls are refined to the extent that eugenic variability interferes with their further improvement, there is no theoretical reason for not assuming the constancy of the eugenic factors.[1]

The idea of freedom involved in this discussion is closely related to the traditional rationalistic idea, but with this significant difference: that, in the words of Dewey, the free man "hasn't accepted a necessity as unavoidable; he has welcomed a possibility as a desirability."[2] According to this idea, of course, the intellectual tools for the interpretation of experience and for the realization of freedom are afforded by the changing cultural medium instead of by eternal principles, whether these are taken to be a "naturalistic" realm of the "laws" of nature or a "supernaturalistic" Spirit or Absolute.

Where freedom has flourished in the past, men's interests more or less accidentally corresponded with the drift of social forces, so that their choices were reënforced by their environment. As this correspondence reaches a high degree, social ideals readily become "self-evident"; and relevant basic ideas, viewed in retrospect, appear as "obvious" rationalizations. But in the modern world the

[1] Cf. Fries, Horace S., "Science and the Individual," *The Antioch Review*, Vol. II (1942), pp. 591–611.

[2] Dewey, John, *Human Nature and Conduct*, p. 312. *Responsibility*, of course, receives a very different definition: see Fries, Horace S., "On Managerial Responsibility," *Advanced Management*, Vol. VIII (1943), pp. 45–48.

technological applications of science have not only complicated human relations but have also intensified immeasurably the conflicts among interests. Accordingly, we are not likely to attain freedom accidentally. How then can we deliberately achieve it?

All parties seem agreed that the answer hinges on *science,* but the question of the relation between science as experimental method and the technological, non-experimental applications of science is crucially relevant for both theory and practice. The *separation* of the idea of science from the idea of its applications—i.e., thinking of them as logically independent—is doubtless one of the most costly misfortunes of our day. On the other hand, the failure to *distinguish* between the two *as they have developed to date* is a source of unnecessary confusion which the enemies of science will continue to exploit until it is cleared up.

The growth of the *method* of science does not, of itself, interfere with the achievement of human freedom. On the contrary, as will be argued, its growth makes freedom more widely and significantly available. It is the *non-experimental* application of science or, more accurately, it is the fact that science has been applied *non-experimentally* that has inhibited freedom and made it more difficult to envisage, and has produced the paradoxical situation of want and deadly conflict in the midst of potential plenty. Indeed, the achievement of freedom has doubtless become an impossibility by means of the older and more familiar conceptual instruments.

I have argued elsewhere that the *method* of science can be employed ethically to attack the problem of the conflict of human interests.[3] Part of the argument is that we can not learn *experimentally* about human choices and satisfactions without trying to *improve* them in terms of all the interests involved in a conflict. If the argument is sound, the importance of understanding the relation between so-called "pure" science and its applications is clearly evident. For it follows that only by expanding science as *method* to the technological applications of science can freedom be secured. Yet the enemies of science argue that "science" must be restricted to certain areas within experience, and that some other method—"reason," intuition, or divine revelation—must be deliberately employed in these excluded areas which always include

[3] Fries, Horace S., "Ethical Objectivity through Science," *The Philosophical Review,* Vol. LII (1943), pp. 553–565; also in "World Revolution Number Five," *The Antioch Review,* Vol. III (1943), pp. 425–437; "Science, Ethics, and Democracy," *Journal of Social Philosophy,* Vol. 6 (1941), pp. 302–325; "On the Unification of Science," *The American Journal of Economics and Sociology,* Vol. 3, Jan., 1944; "A Methodological Consideration" (an analysis of *scientific control*), *Journal of General Psychology,* forthcoming.

the phenomenon of moral choice. But if choice, interest, belief, and knowing are thoroughly *natural* bio-social affairs, then with the increase of their scientific control, once it is under way, the individual comes more and more to participate coöperatively in the environmental and biological factors which *seem* to shape his destiny.

Is the *seeming* control of nature which science affords, within those areas where the method has been employed, an illusion? If not, then natural bio-social factors can actually be employed to shape the individual's destiny; and we have all the elements necessary for a definition of freedom along the lines suggested above. But if scientific control is an illusion, then the destiny of men is irrevocably out of their control, and the universe is a deterministic whole, a "block" affair, with no objective alternatives to what actually will happen. Thus choice would seem to be without significance.

Without elaborating further the concrete significance of the idea of freedom involved in the discussion, I shall employ an operational interpretation of science to show that the experimental method, conceived as universally applicable in theory to *all* problematic situations, does not imply a deterministic universe, a "block universe," that is, with no objective alternatives; that on the contrary, the growth of science to date affords some empirical evidence of the reality of *chance* and of the actual increase in the number of objective alternatives available. If the operational interpretation is itself invalid, then perhaps the sporadic appearances of freedom in the past are illusions. My argument will try to show that there is no scientific justification for such an assumption. Although the reality of freedom may not be capable of scientific demonstration, yet by means of science it may be capable of deliberate human achievement. As a prologue to the attempt to employ science for this end, it will not be amiss to try to see the dogmatic and arbitrary nature of the theo-metaphysical claims that the very method of science, if universally applied, destroys the foundations of freedom.

II

The chief aspect of an operational interpretation of science which is necessary for the refutation of the traditional arguments for determinism concerns the distinction between the concrete and abstract materials of science.[4] This is to be a functional or opera-

[4] Following Dewey, so far as I know, although neglecting many of the refined distinctions in *Logic, The Theory of Inquiry*. This paper is limited to discussion of an experimental logic. But it does not imply that all non-

tional distinction, not one based on the kind of "stuff" or "substance" which constitutes them. The abstract material is illustrated in the history of science by such concepts as vortices, atoms, chemical formulas, neutrons, various mathematical equations, space-time geodesics, etc. The concrete material is illustrated by such things as levers, pulleys, wheels, screws, water, steam, hydrogen, generators, motors, atom-smashers, etc.

The former is used to make predictions about actual transformations in the concrete material. The abstract formula H_2O, for example, predicts that certain transformations can actually be made among hydrogen, oxygen, and water. As a moment of the system of chemical formulas, it directly or indirectly relates all concrete materials which "contain" hydrogen or oxygen by possible transformations into water, and conversely. But in unexplored areas scientific predictions often fail and almost always fall short of precision. Such failures constitute a difficulty to be overcome.

The difficulty is based in both materials. It comes from the resistance of the concrete material and from the inadequacy of the abstract material. Where the latter has become adequate to a concrete situation, the changing concrete material has been robbed of its resistance. It has become amenable to the changing abstract material. Accordingly, it is a commonplace in experimental practice that the basic test of the adequacy of scientific concepts—the abstract material—is afforded by obtaining control of transformations among the concrete material: the transformation of one compound into another, of one energy into another, of one element into another, etc.

This important fact of the priority of the concrete material *as test* is graphically illustrated by familiar instances in the physics of light and of atomic nuclear structure where abstractly incompatible algebras, geometries, and theories of light are employed by the experimenter in order to achieve the concrete transformations at which his experiments aim. If in experimental inquiry consistency functioned as the fundamental test, then each experimenter would line up in one of (at least) two schools, and refuse to investigate any phenomenon which could be approached only with the theory of the competing school. This does not mean that the physicist will not

experimental problem-solving activity is of an equal degree of validity or invalidity—soundness or unsoundness. Where we have not as yet won experimental objectivity, we have won lesser but important methodological prizes which should be jealously guarded against the upsurge of theological obscurantism and other kinds of nostalgic hankering for the "good" pre-scientific days of yore.

have his preferences or his favorite horse. But it does mean that until the specific difficulty has been resolved he will not let the lure of consistency interfere with any experiment which appears promising.

However, as "pure" science, inquiry does not aim at concrete control. Its aim is more adequate abstract material: better laws, principles, theories. Its concrete transformations test the abstract instruments, not as instruments for *use*, but as instruments for the improvement of the instruments themselves. The employment of the abstract material for *use* is the affair of applied science. Accordingly, the aim of "pure" science, as distinguished from the aim of engineering as the latter has developed to date, is the improvement of the abstract instruments for concrete control. It aims at "the discovery of truth" or "knowledge for its own sake," as we say; that is, it is not primarily concerned in its aim with the concrete transformations except as a test, but with the abstract instruments of control.

Accordingly, "pure" science involves a second procedural test of success which might be called *operational generality* or *abstract solidarity*. This is accomplished by means of the relations of implication and the closely related relation of equivalence and other abstract and quantitative relations and operations. Here, of course, consistency functions as a basic test. The point to note is that these various abstract implicative sets do not function in a vacuum but always maintain operational contact with some experimental situation in which the test of concrete control is involved. Abstract solidarity and generality thus serve as connecting links between concrete transformations. A change required in the set at one point of concrete contact tends to involve a change throughout the entire abstract set and, therefore, at all points of concrete contact. For example, an experimental discovery about the bending of light as it passes the sun may, through the abstractions involved, imply something about the nucleus of the atom (i.e., of all atoms). New experiments will then be performed on the nuclei of various atoms [5] with corresponding verification and modification of the abstract set.

III

This aim of science to win abstract solidarity and generality to serve as self-corrective links among concrete transformations is at the basis of one aspect of the traditional argument for determinism.

[5] In this proposition the term "atoms" may function as concrete material. The fact that the distinction between abstract and concrete materials is relative does not mitigate the fact of its significance.

It has been argued that wherever the methods of experimental science and the technological applications of science are successfully employed, there we must assume a thoroughgoing deterministic order. For science searches for a completely determined order upon which it bases its predictions about the concrete world and upon which the dependability of the predictions of applied science is based.

Our distinction between the abstract and concrete materials of science suggests that we treat the argument for determinism under two heads. After we have examined it in view of the abstract material, we shall consider it from the other, concrete aspect.

Electrons turn out to be connected with other electrons, with protons, neutrons, etc. Systems of these constitute atoms. Atoms are interconnected as molecules. Heat, electricity, the pressure of gases, light transmission, etc., turn out to be the movement of one or another of these scientific entities, and various laws and equations are subsumed under more general statements. The whole order, it appears, must be assumed to be deterministically connected in so far as scientific prediction is successful. This requirement results from the aim at abstract solidarity and operational generality.

In the twentieth century, however, it has become fashionable among some scientists (and many theologians) to assert a certain limited indeterminateness in the causal scheme of nature. This fad has been made possible by the famous Heisenberg principle. Fortunately, it is unnecessary to go into the complexities of this principle to justify a faith in both the reality of freedom and the efficacy of science. For our operational interpretation of science will show that the abstract findings of experimental science are completely irrelevant to this question of the possibility of freedom —although the success of science will have a great deal to do with transforming the theoretical possibility of freedom into a concrete actuality.

It will be observed that the causal order "discovered" by science is an order which obtains among the items in its abstract material. It is a fatal, as well as an operationally illogical, inference to transfer the order which science institutes in its abstract material to the concrete material, the transformations among which are made possible by the abstract instruments. As Dewey has pointed out, such confusion is completely analogous to that of reading the structure of any instrument into the structure of the material in which the instrument is used. It may be, of course, that the concrete world of realities is part and parcel of a block universe with no gaps or openings. Perhaps the abstract instrumental realities are

part of the same block. In either case freedom, as we have defined the term, is a pure illusion. But the kind of order displayed within the abstract material, whether it be deterministic or indeterministic, has nothing to do one way or another with this question.

The belief that since science seems to aim, in its second procedural test, at complete abstract solidarity, therefore the universe (or that aspect of it to which the methods of science can be applied) *must* be a deterministic block, could not be held without a prior assumption that the concrete world is one of mere "appearance," whereas the abstract material of science furnishes a "picture" of ultimate "reality" which excludes the pictures we all have of various concrete actualities. For concretely there is no need to demonstrate the existence of alternatives: we *find* them or "face them," as we say; they may be "called to our attention" or even "forced upon us." On the other hand we *know* alternatives as we are aware of the actual consequences involved in choosing one or the other. This prior dualistic assumption, in turn, as has often been emphasized, is a carry-over into modern times of pre-scientific Greek and Christian theories of knowledge and reality. In accepting science in terms of its operational procedure as the exemplar of dependable knowledge of concrete realities, we are committed to a rejection of these theories. Accordingly, we are not committed, as yet, to a denial of the possibility of freedom.

However, we have yet to examine the argument for determinism which stems from consideration of the concrete material of science. We have criticized the argument that because of the aim to formulate theoretically unbroken connections within the abstract material, the concrete world must be assumed to be a deterministic order. But we have not considered the claim that a rigid causal order is implied by concrete predictability. The argument is this. If scientific inquiry can be applied universally, then the universe is a deterministic whole. The presupposition here is that perfect and complete knowledge would involve the precise prediction of the one and only concrete course of events which is possible. This course of events is the one determined from the outset. Traditional scientific determinism did not try to blink the fact that in such a scheme there are no objective alternatives in experience. Since it was not concerned with the problem of theological responsibility, it could more honestly admit such an implication than those theologians who were concerned with both the omniscience of the deity and free will. Some determinists, not all of them it is interesting to note, claimed to avoid serious fatalistic implications by a distinction between "subjective" possibilities, or seeming possibilites, which appear because of ignorance of the one true course of events,

and the one and only objective possibility. If the universe is a block affair, we have a right to the pious hope that this distinction is valid, and really avoids the fatalities of fatalism.

The deterministic conclusion, in this second aspect of the argument we are considering, follows from the assumption that the successful predictions of science presuppose a deterministic order in the concrete material where science (as method or as technological use) is assumed to be applicable. For science aims at predictions (or at least successful prediction is the acid test of science) and predictability requires a deterministic concrete order.

Now even if this claim were valid, it would not disprove the reality of freedom. For there are many concrete actualities which science has hardly begun to investigate. We have referred to choice and knowing as events which have not as yet come under experimental control. But this observation about the present limitations of science is made for the sake of clarity, not as a precaution against determinism. For, as we have seen, the idea of freedom involved in our discussion implies that only as choice is investigated experimentally can we hope to institute freedom on a wide and enduring foundation. Accordingly we are obliged to examine the deterministic argument from prediction on a different basis.

A different approach can be made to it through an examination of the actual activity of scientific prediction. By means of an operational analysis we shall show that scientific predictability requires an incidence of indeterminism; that is, the objective being of alternatives. If the operational principle is itself invalid, then perhaps freedom is an illusion.

IV

The very term, "scientific prediction," is misleading. For prediction is associated with prophecy. Yet scientific or experimental control of concrete materials is the very opposite of prophecy. We recall that the deterministic notion of scientific predictability means that there is only one course of events objectively possible. Yet the more scientific control we have of certain phenomena, the larger the number of available ways there are of guiding their interactions. For example, the more that is known chemically about hydrogen, oxygen, and water, the more different ways the chemist has of instituting transformations among them. The growth of science opens up alternatives within the area of the concrete material known. Thus the development of science, when viewed concretely rather than through a preconceived theory of knowledge, is seen to discover new and more alternatives. The realm of possibility is widened instead of being narrowed. This

apparent development may, of course, be an illusion. Our argument is that it is unreasonable to assume it to be such. Furthermore, the empirical fact of the apparent increase of possibilities with the growth of science seems to constitute evidence against the assumption of determinism. The determinist apparently argues this evidence aside simply by insisting on his own pre-scientific notion of scientific prediction.

The pre-scientific confusion of prediction with prophecy has important practical implications today in the realm of social science. Many of us believe that a "good" social scientist is the man who can prophesy what is going to happen. Instead of looking to social science for the development of concrete controls of social phenomena, we look to it as to a fortune teller for the inside dope on fate. Such an original thinker as Marx employed this notion of prophecy in his theoretical construction of the coming of the classless society. It is even more explicit in Engels and Lenin. Many modern "bourgeois" social scientists have now arrived at this stage.

In the natural sciences it can be readily noted, however, that the experimental scientist never predicts categorically what is going to happen. His predictions, on the contrary, are always in a hypothetical form. *If* certain conditions obtain, *then* certain consequences will ensue. And in actual procedure, the scientist or engineer always has a hand in instituting some of the conditions.

The only apparent exceptions to this claim about scientific prediction lie in such fields as meteorology, geology, and astronomy. The former, however, is not an exact science. If and as it becomes more exact, controls will doubtless be instituted. In the case of predictions in astronomy (as well as in the other two sciences) we note an important hypothetical factor when we observe the predictions concretely instead of through its abstract material. For the predicted observations must be made as from certain points on the earth: If one looks a certain way in a certain direction from a certain place at a certain time, he will . . . etc. Furthermore, all of the actual experimental tests in astronomy are *indirect* in that they are made in terms of effects on earth. Advocates of the pristine purity of experimental science often, if not always, cite astronomy as the most advanced (or possibly the second most advanced) of the experimental sciences. This is a curious reflection on both the position advocated and their notion of science. For on a purely empirical basis, astronomy has proved to be the most *dependable* of sciences, *for practical purposes,* for thousands of years. But its theoretical foundations have probably undergone more radical changes and are probably more indefinite today than

those of the other natural sciences. If and when astrophysics develops an adequate understanding of gravitation *via* direct experimentation, this limitation of experimental astronomy to the earth's surface may conceivably be removed; and science may take charge of the motions of the planets and the suns. As meteorology becomes *directly* experimental it, too, will have begun to institute actual controls in lieu of prophecies. The "scientific" nature of its successful prophecies in its present state will not be analyzed. But doubtless the basis of their success, in so far as they are successful, is statistical in nature. If so, our analysis of prediction in the social sciences will throw some light on this question.

A word about geology. Its status is similar to that of astronomy. Its concrete material for the most part is grossly macroscopic. The most notable exception to this claim is the dating of certain events by radio-active analysis. But here definite experimental tests are introduced. Its macroscopic concrete material, like that of astronomy, is sufficiently uniform and regular (as far as we know to date, but with rather definite limitations as to the time-span of such activity) to warrant considerable faith in its empirical, non-experimental (retroactive) "predictions." The faith is the more justified, as in astronomy, because it employs so many abstract concepts which have been tested experimentally by concrete controls in mineralogy and physics—e.g., the mechanics of heat and ice—and because the time-span limitations are always implicitly recognized: the earth, the other planets, and even the suns presumably have beginnings and endings. Incidently, one reason why geology is even more advanced than astronomy is that a much larger proportion of its concrete material is much more readily accessible to relatively direct observation, and its more remote concrete material is only a small fraction as distant (in time and space) as most of the concrete material of astronomy.

In the field of social subject-matter we find that certain categorical statistical predictions are quite dependable. For example, if life insurance companies depended only upon the predictions of the actuary, they probably would not require direct or indirect government subsidies. But there is an assumption underlying all such statistical predictions that the relevant determining conditions will remain statistically constant. This means that although these concrete conditions have not been subjected to scientific control, yet, *partly for this very reason,* as some of them change in one direction they will be compensated for by corresponding changes, of other conditions, in an opposite direction. In so far as there is reason to believe that the varying conditions or deviations will cancel out, the assumption is empirically, though not experimen-

tally, justified. Experimental justification can occur only when the statistical procedure is employed to secure concrete control as tests of improved abstract material. Such experimental tests of statistical procedures do, of course, occur in the natural sciences.

We need note only two further factors in regard to categorical statistical predictions. Actuarial figures are continuously corrected to take account of the shortcomings of statistical constants. Secondly, exact statistical predictions are applied only to the group, not to the individual case. When applied to the individual case they are always in terms of numerical probability; e.g., there is one chance out of so many that a given person of a specified class will die during the next twelve months. As the statistical class changes, the probability for the same individual case is likely to change, although theoretically if the probability were known in terms of *all* classes *relevant to the individual case,* there would be no change. Even in theory, however, the numerical precision is *merely* abstract as far as the individual case is concerned except as the numerical value approaches one; e.g., a fake coin with two heads will always come up heads—unless it falls on edge in a crack. Except in the sense of serving as a compulsory saving device, an honest case of life insurance can be only a precaution, never a "guarantee." Choice functions through the individual.[6] As choice becomes gradually implemented in certain areas by the discovery of new scientific controls, the statistical averages change. For example, the increase of controls in the area of child health continues to decrease the rate of infant mortality as long as the social aim continues to operate that infant mortality should be decreased (other relevant conditions remaining at an average constant). Furthermore, this aim is presumably one of the determining factors. If it should become relatively dearer in society generally (say, for example, relative to the dearness to Americans of rapid automotive transport), the average would again decrease.

If our analysis thus far is correct, we have found that scientific prediction, except for non-experimental, statistical, categorical prophecies, reduces completely to the greater or less control of concrete transformations among changing realities. Even statistical predictions are conditioned by concrete control and observational operations, and presuppose the average constancy of certain relevant conditions; that is, their success depends upon "accidental" compensating individual deviations. Furthermore, except as "certainty" is approached, they apply with precision only to the group,

[6] The fact that for a statistical purpose a human individual may be treated as a series of individual events does not affect the argument. It is also true that a group of human beings may be treated as a statistical instance.

not to the individual members. Accordingly, we may conclude that they are not dependent upon a rigid deterministic order.

Our argument against a deterministic order is not intended to demonstrate the absence of "causal" connections among concrete occurrences. Occurrences can be controlled because of their interconnections (including those with the controlling agency). As these connections are successfully "abstracted," as it were, in the abstract instruments of control, their *compactness* within the abstract material simply indicates the relative perfection of these instruments for universal applicability in instituting and improving concrete transformations. But our argument does point out the error of reading this abstract pattern back into the concrete material to the exclusion of concrete, objective alternatives. Alternatives themselves depend upon these concrete connections. Because of their connections, occurrences can be *caused* in certain specific and alternative ways through the use of adequate abstract instruments. But the instruments must be used; that is, they must be applied by certain concrete existences—namely, human beings.

It is confusing to fail to distinguish two meanings of *cause* as indicating achieved controls on the one hand and natural connections on the other. When we search for "causes" in nature we search for connections (i.e., certain relations) among concrete occurrences which can be employed as instruments of control. When we have found systematic *causes* in nature we have reshaped concrete as well as abstract material in such a way as to serve as instruments of control. It is worse than naïve to argue that in order to have dependable connections within the orders of nature, these orders must ultimately constitute a rigid deterministic whole. Success in avoiding the confusion of the two kinds of materials removes any logical temptation to make such an argument.

V

The operational rejection of determinism may be called belief in *chance*. If so, *chance* must not be identified with what Lucretius seems to have believed in. For although he, too, had a vested interest in some kind of concrete freedom, he tied up his notion of chance with metaphysical atomism. But an operational analysis of science reveals that such a belief today is either purely speculative or, if argued on the basis of science, involves a confusion between the abstract and concrete materials with which experimental science operates. The same charge apparently applies to contemporary versions of materialism such as Mr. Russell's "eventism," which, although it is more dynamic, relativistic, and evolutionary than

atomism, substitutes certain abstract entities as "reality" for the concrete realities of everyday life and the laboratory.[7]

In any case the reality of chance does not guarantee freedom in any concrete relevant sense. Chance in and of itself is as blind as fate. The practical identification of the two concepts is sound. If chance is to develop into freedom, it must be exploited by intelligent foresight of consequences. But the most dependable knowledge of consequences, it appears, rests upon experimental science. The growth of experimental knowledge reveals new alternatives *within the areas where the method has been applied,* and at the same time it furnishes instruments to help realize desirable alternatives *within these areas.* The contemporary revolt against "scientism" is justified only in this sense: that experimental science to date has not been successfully expanded to certain concrete materials[8] of crucial importance. As an attempt to limit the possibilities of the experimental method, it is nothing short of

[7] Mr. Whitehead's philosophy of events is not a version of materialism. But it, too, supposes the necessity of an eternal and unchanging ground for the changing realities of human experience.

Incidentally, Mr. Russell's tautological demonstration of determinism that "the future will be what it will be" can hardly have been intended as more than a rhetorical device. For that proposition can be seen to be clearly compatible with indeterminism by comparing it with the following which is incompatible: The future will be that which the present course of events is *now* headed for.

[8] Although we must speak of the different concrete materials of the different sciences, we must recognize the distinction to be an artifact. There is a physics of the live human body and an economy of the rivers. For psychology the environmental objects are at least as significant as the biological. The difference between the concrete materials for the different sciences appears to be imposed by the kind of concrete transformations aimed at by the science, and, accordingly, by the kind of relations which obtain in the abstract material of that science. It amounts to a different way of approaching the same general kind of concrete transformable realities. However, the history of alchemy ought to warn the social sciences that not *any* kind of practical aim at transformations will succeed, at least not in the beginnings of a science. Until the social sciences are established experimentally, they ought to be wary of any classification which fixes a separation among them. Then after they have become experimental they may find, like the natural sciences, that the "separations" evaporate at the border lines. In a paper referred to in the third footnote ("A Methodological Consideration") I have argued that psychology (as distinguished from biology) can not become significantly experimental until, through the development of a new concept of scientific control, it attacks the problem of the social experimental investigation of choice and belief. In the meantime many of the activities in psychological research will certainly appear to justify the charges of the supernaturalist enemies of science that psychology belongs to "those strident pretenders, the social sciences" (Tigner, Hugh S., *Our Prodigal Son Culture,* Willett, Clark and Co., 1940, p. 107).

an invitation to return to pre-scientific superstitious methods in areas where the need for experimental inquiry is the greatest.

Obviously enough science has freed us from some of the worst tyrannies of nature and of theological dominance.[9] That it has not freed us from *some* of the tyrannies of our social institutions, that its *non-experimental,* capitalistic applications have indeed created new tyrannies, can be readily explained by the fact that we have not employed the method itself to the problem of the application of science and to ourselves. Whether or not this explanation is sound can only be decided after the attempt has been made to expand the method in these new areas. Until the attempt has been made, however, those churchmen and their apologists who argue the *impossibility* of success must be under suspicion of having a greater concern about some specific institution than about the human enterprise itself. In the terminology of war this is treason to the human enterprise.

HORACE S. FRIES

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RADICAL EMPIRICISM AND RADICAL HISTORICISM

SOME CRITICISMS AND A FUNDAMENTAL RECONSTRUCTION

TRADITIONAL empiricism, associated with the names of Locke, Berkeley, and Hume, developed and thrived partly because rationalism could be demonstrated to have practically no value for predicting and influencing future history. Some traditional empiricists, but not all even of the founders of that school, for instance, not Berkeley, insistently expressed a very practical concern for history. But their actual analyses of experiencing and of truth-seeking were not oriented with reference to history as a problem. Rather they were concerned with abstraction as a problematic process through which future history could be predicted if the abstractions were properly arranged.

Recent, or "radical," empiricism, on the contrary, has taken as a primary problem the relation between the given and the temporal order of giving, or presentation, that is, has taken as a problem the historical structure and reference of experiencing. *Em-*

[9] However, we should not indulge in over optimistic napping on our freedom from theology. The above was written before I saw President Hutchins' notorious pronouncement, which appeared in *The Maroon* (October 29, 1943), that not only theology but also the theological school is "at the apex of the university." Professor M. C. Otto has called attention to the likely social cost of such verbalizings (confused or opportunistic, as the case may be) should they eventually receive the financial support of corporate business.

piricism becomes "radical" empiricism just when the concept of history tends to become assimilated into the concept of experience.

C. S. Peirce was an early "radical" empiricist and of his thought it might almost be said, to paraphrase a Spinozistic dictum, that it proceeded on the assumption that the order and connection of experiences is the same as the order and connection of histories. Peirce thought that he had overcome the duality between the given and the historical in one stroke by means of a system of categories, little noted at the time when he formulated them, but since become famous although scarcely for performing the task that their author believed they could perform.

Peirce assumed that an integrated human person is simply the highest finite instance of an idea. The person is a system of reactions, or of tensions, somehow become self-reflective. Thus a person exemplifies the category of "thirdness," that is, the person is a meaningful item, not *qua* givenness in any system of experiences, nor *qua* its influence on other items, but only *qua* its abstractable significance or referential character. Yet a person is a concrete and going concern. As tensional or reactive it is a concern exemplifying "secondness." As substantive, composed of ineluctable qualia, it exemplifies "firstness." To use terms that are borrowed from vocabularies other than Peirce's, he regarded "thirdness" to be a quality founded upon the basis of "firstness" and "secondness," that is, to be a supra-formation upon the latter. The three categories he conceived as discoverable in any structure of immediate givenness and also as discoverable as types of step or stage in evolution. The evolution of entities from the simple to the complex was regarded as an evolution in the structuring of experience.

It remains a mystery how atomic elements of "firstness," logical points on any one of the many (perhaps infinite number of) dimensions of quality, could become dynamic in collocation. That the qualia are indeed abstractions and not merely the basis for constructing abstract dimensions of possible qualitative variation, almost no present-day analyst of experience would deny. To arrive at the notion of qualia, we first of all isolate the simplest spatial parts of experienced patterns, and then we note how such simple isolates vary from time to time in respect to affective coloring. The non-affective quality, such as a certain variation of redness, is a construct based on a willful isolating within the perceptual process, and then on a factor-analysis of that which at any one moment of perception is absolutely simple, but which varies in different dimensions of variation from time to time.

William James must have questioned the propriety of the

Peircian procedure, for James did not define the atomic elements, the least units among the salient, well-articulated particulars in the "stream of consciousness," as fundaments of its transitive character. For James, the indefinite "fringes" of definite particulars were the at once transitive and relational factors. These factors were at once dynamic and referential and so James, too, tended to blend conventionally distinct conceptions. But James also listed another type of reference besides the dynamic feeling of transition towards a fitting conclusion, namely, he listed the mere recognition of similarity and of difference between contents. "So far forth," then, the Jamesian "stream of consciousness" contained a non-evolving factor. Evolution in modes of recognition of similarities and differences, that is, the learning to recognize new types of similarity or difference, would have to be considered by James as a change taking place partly beyond experience, i.e., in the nervous system.

The present writer is not at all sure that so-called "static" association and discrimination is not merely a less urgent (less connected with salient or violent tensions) sort of dynamic association. In other words the whole distinction may be one of degree, made possible in its absolute form only by inadequate, overly hasty phenomenological exploration. For that matter, one may assert that the implied historical unity of the Jamesian "stream of consciousness" was rather assumed than empirically established. Such unity could be established only for a certain sophisticated type of experiencing, but such a type was undoubtedly possible to a William James. James demonstrated that the "specious present" is felt as immanently directional in character, but his "temporalism" was less than an *historicism*. He did not demonstrate that the situation of the empirical self may be felt to reside in a world, and that situation and self may be experienced as alike grounded in a *destiny far transcending the momentary requirements*, or dynamic associations, as between self and situation. James admitted that there are static associations in experience, and he described some directional associations, but not all the directional associations. The complete historicism of a Peircian empiricism was logically invalid, and the more valid historicism of a Jamesian empiricism was incomplete as historicism.

G. H. Mead assimilated empirical history to an empirical "present moment." He assimilated experience and history by denying history in the usual sense. Novel experiences of meaning, Mead urged in effect, condition the very factors which constitute the past of that empirical system within which the novel meanings emerge. Although this viewpoint is based on a theory of relativity, it enables

one perspective, and that not necessarily the most inclusive, to arbitrate in an absolute sense as among the claims asserted from other perspectives. A "present moment" yields the absolute truth about its own history and reveals the absolute connection among the factors in its own causation. How could a doctrine in terms of which the past is conditioned by the present assert in effect anything less than this? Such a doctrine stands empiricism nicely on its own head and nothing could be more rationalistic in alliance.

The same holds true for the so-called empiricism of A. N. Whitehead. Whitehead's view of history is completely rationalistic, resting as it does on a doctrine of preëstablished harmony. The aims of each "actual occasion" of experience, opines Whitehead, are bestowed upon the experience by God. That might be an empiricist doctrine if Whitehead did not qualify it by asserting that the aims in question belong to "the primordial nature of God," namely, an eternal aspect of God, something existing prior to, or at least apart from, history itself. (Not only from world history, but even from God's own history!)

Whitehead also asserts that experienced history is broken up into "occasions." These are non-overlapping fulfillments of "aim," or failures to fulfill perfectly an "aim." Although Whitehead does not note the connection, the "occasions" are very nice isomorphs of the biological construct "disturbance-equilibration." The present writer does not deny the value of that construct, nor that some cycles of experiencing are isomorphic with the construct. Not all "occasions" are isomorphic with it, and indeed the simple construct would be greatly modified by any critical scientist. While some aspects of equilibrium are being attained in organic processes, other aspects may be being lost and thus experience, associated with the substrate, may not simply pass towards any sort of a phase of immediate conclusion. Even "specious presents" may be more or less obviously articulated and it is seldom that one must, because of its intrinsic patterning, break experience up into successive "occasions" of succeeding or failing "aims." Nor are "aims" themselves atomic. Finally, Whitehead, like James, stresses felt immediate-transitions, but not the felt sense of destiny. He does not show that the *intrinsic character* of an "occasion" *may signify rôle* in a destiny. Mead, however, defined selfhood as an integration of rôles.

A radical empiricism that is also a radical historicism must stress the intrinsic belongingness in a total history of some situations as well as stressing their felt transitiveness. In sophisticated experience not merely is there a felt interaction between self and situation, but both factors participate in a *world felt as the scene of a*

destiny and, in the highest instance, as *being itself tendential.* William James was simply wrong in the assumption that only the more transitive factors in experience are relational. *Some very substantive factors are also relational.* For example, the felt self is not merely, or even primarily, founded on organic sensations, but rather is generated as an affective generalization, a *gesture* in the face of existence. The present writer feels that Peirce was correct in supposing the historical self to be a sort of idea. At least self-in-attitude generates ideas in self and in others, and an attitude is an interpretation.

Peirce, however, was wrong in making the elements of "firstness" into primordial history-units. The categories "of firstness," "secondness," and "thirdness" are analytic. The simplest possible historical experiencing contains in "pre-analytic" form (to borrow a term from Loewenberg) those aspects to which each of the three categories should refer. And all experience is historical. All experience, all historical units, must have a certain complexity, namely, sufficient to enter into dynamic relations and evolution.

If evolution characterizes the patterns within existence, and if the simplest patterns capable of participating in evolution have some degree of complexity, then an existence containing finite unities can be traced towards the past only a finite distance in time.[1] Spread-out content always tends to change and could not have existed as such prior to the beginning of an evolution. At the pastward limit of evolution, or of change, spread-out content emerged from a substantive state and as soon as potentialities for change (perhaps even as soon as potentialities for development) cease, spread-out content will be dissipated and a substantive state will remain. Such a state might generate a new collocation of content. Evolution in that collocation might give rise to local substantive states; then potentialities might be again dissipated, and spread-out content might likewise vanish. A substantive state would remain. This theory suggests an isomorph to the famous second law of thermodynamics.

In man substantive states are not atomic contents, or data, and they are also not transitional fringes of feeling or developing matrices of intra-situational change; that is, they are not co-extensive merely with the single occasion. They are more pervasive than data, more permanent than fringes of feeling. An *enduring mood* is such a state and it *may refer to a state of the*

[1] Tendential change presupposes structures; but first structures are not self-explanatory. There must be a transcendent. This is identified on one dimension of classification with the pure phenomenal substantives.

world. Over against the mood in which the empirical self is grounded may be a substantive in which the objective situation is grounded. The substantives are referential, and they evolve, but slowly. They refer beyond the situation in space and in time. They are existential feelings, signifying who one is, and signifying a locus for present happenings. They are orientational.

In the cosmos the substantive, the total substantive, may be logically primary and also prior in time, but also later in time, than an evolution of content. A substantive state as affectively referential is a *synoptic transposition* of the affective consequences of various developments and it conditions future development. In the cosmos all that may be transposed into the substantive may also be required anew, as a theme capable of further developments and connections. Content "colors" the substantive and the substantive generates new but relevant content.

Some states of human experience are purely substantive, without residue. Yet they may by their very quality presuppose a development in content prior to the substantive moment, and they may influence future moments. *Mystic states are like that.* States approaching sleep are also like that. But this is not the place to enumerate the various modes of historical experiencing. There are passion modes, and ego-purposive modes, and ought modes, and dream modes, and many others. All must have a place in a radical empiricism which is also a radical historicism. All must be considered in a more fully elaborated view of history, but such a view could fit the general pattern suggested in the above reconstructions of, and additions to, empiricist and quasi-empiricist philosophy.

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BOOK REVIEW

Man the Measure. A New Approach to History. ERICH KAHLER. New York: Pantheon Books, Inc. 1943. 700 pp. $5.00.

In this work Erich Kahler has set forth, with encyclopedic skill, a saga of Western man. Devoted to the humanist credo that man must control himself and his environment to his fullest self-realization, he has traced a course of development which, in its final outcome, is to depict that which is characteristically human in history. We find here a special, somewhat dialectical, interpretation of the meaning of history. But more than this, Kahler has put together a number of particular histories of various activities and ideas. Whether or not one can accept his own grandiose thesis

about Western civilization (which to some will seem more a prayer than a fact), his ability to trace the social and cultural backgrounds of our present conflicts must win him much admiration as an historian. The stress which the author lays upon finding the unity and continuity of human history is in the interest of man's further development. If Kahler has oversimplified the problem of interpreting history, if he is too prone to force unity and continuity where dispute is legitimate, it would seem to be due to his great concern that men gain that peace which he sees prophesied in the records of human accomplishment.

The accomplishments of Western civilization are described as due to man's ability to transcend apparent limitations of his own well-being and to reconstruct to his own advantage the material and social conditions of life. This is the central, humanist thesis of the volume. What Kahler means by the human ability to transcend limitations and reorganize environments may best be shown by an extended quotation.

> The procedure of transcending the limits of one's own being, this psychic procedure, consists of two acts: the establishment of these limits by detaching and discerning a non-self from a self, an alien, outward existence from one's own clearly conceived existence, that is, an act of objectivation and subjectivation; and the establishing of a new, conscious relationship between one's own existence and the clearly conceived non-self, the objectivated, outward existence, by a feat of deliberate vicariousness. The evolution of the quality of being human is the successive genesis of these two acts and faculties in man. In its early periods [prior to the Renaissance and Reformation], the main concern of human history is the formation of the faculty of detachment and discernment. The later part of human history . . . deals with the genesis and completion of the faculty to transcend. The subject of human history, therefore, is man's relation to the world surrounding him. And this surrounding world comprises two spheres: a wide circle, consisting in the non-human world, i.e. the universe, and a narrow circle, consisting in the human world, i.e. the human community. These two spheres are the foils of man in the process of his evolution. First he discerns and detaches them from his own existence, of which he is increasingly aware, and later, in transcending them, he establishes a new relationship with them. [Pp. 229–230.]

This epitome of Kahler's humanistic thesis, as well as his elaboration, is clearly a reflection of the process of individuation as suggested by certain contemporary psychoanalysts.

The actual course of human history is viewed under a process of growth from pre-individual community through post-individual collectivity. Several points should be noted here. First of all, Kahler considers that he has the right to take Western civilization as normative for this process of all human growth. He does not argue this point, but rather dogmatically declares that "Western evolution has passed through the same stages as that of the East,"

and "it went on to further stages and developed the forms, methods and ways of life that are about to swallow all other remaining forms of culture and that are bound to become the determining factors of all future developments" (p. 24). This is certainly very cavalier treatment of large areas of human development; it is also a naïve pre-judgment of the outcome and significance of the present world conflicts. Second, in his discussion of primitive man's pre-individual community by participation he borrows uncritically from recent French sociologists (such as Durkheim and Lévy-Bruhl) and proceeds to describe a primitive metaphysics of the self and non-self which fits his thesis but may never be discoverable, much less useful, as the cradle of Western civilization. Finally, his view of the evolution of human individuation appears dependent on both a dialectic of extreme reversal and an ambiguous compounding of human reactions and understandings such that each successive period both follows a previous trend or, if the trend has completed itself, its reverse and embodies the full meaning and characteristics of the previous development. This questionable metaphysics was more bothersome to the reviewer in that portion of the book dealing with the developments before the Renaissance than in that treating the later period. In the latter Kahler assumes a more carefully descriptive attitude without losing his synoptic charm. (Parenthetically it might be noted that, while no single reviewer is competent to pass judgment upon the historical accuracy of every detail in such a wide field, I did notice more disputed points taken as unquestioned certainties in his treatment of ancient and medieval history than in that of the modern development.) On the whole, his metaphysics of growth and maturation makes a less favorable impression than its author intended. This is particularly clear when one comes to the unexpectedly simple conclusion to the volume (cf. p. 623), where the author points out that all that man seeks for himself in a public collectivity may be gained by solving the problem of distribution!

The major portion of this volume, however, stands somewhat beyond the limitations referred to and may be considered in its own right as a valuable contribution to the cultural background of the present era. The first section of the book deals with "the formation of the human individual." The evolution of self-consciousness out of the religious participation of tribalism and the development of "world religion" through the fusion of Greek philosophy and Christianity are depicted as leading to the worldly individual. The latter was relatively free of his earlier material and social limitations yet for this very reason estranged from his community. The only final solace for this man was a religion lack-

ing the vital bond to his community offered by tribal religion, a religion of faith, spirituality, and universality. This represents to Kahler, however, a major step in the human detachment and discernment of immediate environment and the awareness of the independent self. It led to a self-defeating dualism of temporal and spiritual empires which, at the time of the Renaissance, destroyed man's final solace and left "a multitude of emancipated, self-reliant individuals," who "faced the task of ruling themselves, of building up a deliberately organized community, a collective order" (pp. 233–234).

The second and larger portion of the book deals with "the formation of the human collective." While the former section is at times too schematic and historically arbitrary, in the last four hundred pages of this volume the reader will find a series of essays of independent validity and value. Kahler does not, of course, drop the proof or method upon which he is engaged. Thus the modern era, after the breakdown of world religion through self-destructive dualism, led men to the possibility of humane, secular relations to nature (through rationalism, materialism, and romanticism; cf. pp. 237–238) and to community (through empire, nation, democracy, and the state; cf. p. 335). Each of these two general relationships, moreover, led to an inhuman, self-destructive extreme which, by conscious endeavor, may and should be reversed in the future. Within this broad framework, however, are seemingly independent essays which trace various human activities and modes of thought, often extended in scope to cover earliest origins in antiquity and final issue in the present.

Brief treatment is given to the Reformation, the rise of rationalistic science, art, economy, and politics—all under the title, "Autonomy of the Secular World." The Reformation (the handling of which omits Calvin, whose influence is dealt with later in a section on democracy) is interpreted as leading to state and community service and the sovereignty of temporal activities, with religion but a remote part of human interest. The development of rationalism led to the further humbling and undermining of world-religious faith and the autonomy of the human mind. The course of artistic achievement was the change from the visual as a means of comprehending the non-visual to the visual as an end in itself and the abstract structure of physical forms as the purely artistic transcendence of the visual. The growth of economic motives is linked to the process of secularization; capitalism means the autonomy of economy, "the restless, boundless progress of exploitation of nature and production of goods which nobody has the leisure or the capacity to enjoy any longer" (p. 313). In politics,

theories of sovereignty, natural law, strategy for power, and international collectivity "inaugurated a new relation of man to his own human nature, a new method of envisaging, exploring and treating the human soul" (p. 314).

Extended treatment is given to a variety of topics massed under the title, "Anarchy and Transcendence of the Secular World." The key to the present human predicament Kahler finds in man's growing helplessness to hold together, coördinate, and integrate the activities and techniques which have developed autonomously since the Renaissance. Signs of human effort "to organize the overgrown divisions of human experience and knowledge, to overcome the anarchy of the human world," are illustrated as tendencies leading "to the transcendence of the individual and to the progressive collectivization of the human world and of human life" (p. 334). The development of nationality led to collectivization under profane hieratization of a ruler. Democracy fluctuated between individualistic rights and prosperity and collectivistic checks. (It should be noted that Kahler is here concerned for the most part with Swiss democracy and the significance of Calvanistic ethics in Europe; to most historians of ideas this exclusive selection, like that in many parts of the book, will appear arbitrary.) The state is viewed in terms of Prussian history; its goal (following the thesis of von Treitschke) is an abstract idea separate from a personal ruler. Political transcendence of individuality is paralleled by a similar transcendence in economy and technology. Free economy led to the concept that "history is made by [external] conditions, not persons"; politics turns into an aspect of economy. World economy (national and imperial) led to the interrelation of nations and events, the predominance of mechanization, the equalization and standardization of individuals and groups. Thus, claims Kahler, we see how historical reversal occurs; "unlimited freedom of individual enterprise [arising out of the breakdown of world religion] resulted in an inescapable, anonymous collectivity" (p. 465). In the intellectual and cultural field the anarchical condition of human collectivity is paralleled. Rationalism brought about its own inversion, materialism, and "the revolt against reason." Romanticism led to the cult of genius and a similar revolt. The modern development of art eventuated in a transcendence utterly alien and unintelligible to the average man. (A rather delicious comment upon *Finnegan's Wake* illustrates this: "only one thing is proved by this last, encyclopedic attempt to comprise the world in one picture: that today's world cannot be conveyed by any hitherto known means of art," p. 514.) The cultural rebellions of intellect and works of art have led to a use-

less transcendence of the intelligentsia over the economic and technical aims of the people; the masses lack understanding leadership, the potential leaders have isolated their interests from practical life. (Parenthetically it may be said that this modification of a point scored by Spengler appeals to the reviewer as Kahler's most valuable comment upon the modern scene; it is a distinct loss that the historical scope, arbitrary divisions of subject, and sheer bulk of material tend to obscure the implications of so prophetic an insight.) The "universal civil war," which is the result of this new dualism (of the sub-human and the human, or, broadly, economic collectivization and cultural individualization) was prepared by economic crisis. Its issue in two world wars has been the increasing rule of technics in human life and nihilism in human values. In conclusion, Kahler points out that again man as an individual has become lonely and anxious, insecure in his relationship to nature and society. "The modern development of man . . . shows one thing with indisputable clarity: the growing tendency toward collectivity and the invalidation of the individual" (p. 609). This is due to the fact that the specialized work of today does not concern the whole human being. Only that kind of community which involves the whole range of human interest and participation without destroying personal integration, only a genuinely public collective wherein man is no longer subordinate to the growth of goods but rather governs things to his own good, can form the real "kingdom of man." As indicated before, Kahler ends rather abruptly and arbitrarily by stress upon solving the problem of the distribution of goods as the key to his kingdom; he makes a brief but eloquent plea for the universal spread of, and participation in, the forms of democracy.

It is to be hoped that from this synopsis of contents and interpretations the reader may grasp some of the freshness of Kahler's approach as well as some of the fairly arbitrary principles of selection and views brought together in the book. The writing of a universal history of man seems to me an intellectually unpropitious but inevitably fascinating undertaking. Kahler's dialectic of growth is just applicable enough to stimulate one's desire to view Western civilization as a monolithic whole. But disillusion sets in at many points, as I have tried to indicate. Perhaps most blighting of all is the realization that the very intention of this pyramid of facts is ultimately frustrated: solutions to the problems to be dealt with in the future, as finally intimated by Kahler, are not felt to be in exclusive continuity with the past which he depicts, the objectivity which the historical panorama was to provide appears issueless, the quests for Kahler's "kingdom of man" could have

been discussed without the perspective which he provides. The cause for this breakdown of intention is basic. In general, it stems from forcing a metaphysics of individual growth upon pluralities of growths and their intersections. "This book," says Kahler at the outset, "is an attempt to write history as the biography of man and from it to gain a view of the future of man." Let us counter this with Goethe's words: "Mankind? It is an abstraction. There are, and always have been, and always will be, men and only men." There is no history of man as man; history is of men, who are not dominated by one collective conscious endeavor but motivated by complex varieties of drives and whose activities are integrated at any one time about a plurality of centers. How the vector of these forces and energies is to be drawn for a given period by the historian is a continual and everchanging problem. That it may be done—and that it must forever be redone—for concerted action upon desired ends, is the faith which inspires historians and which should lead to ever fresh attempts for clarification.

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BOOK NOTES

Principles of Systematic Psychology. COLEMAN R. GRIFFITH. Urbana, Illinois: University of Illinois Press. 1943. xv + 718 pp. $4.50.

This remarkable book, by the Director of the Bureau of Institutional Research and Professor of Education at the University of Illinois, is dedicated to "the members of the Philosophy Club." Perhaps it is this contact with philosophers that has given the author an awareness of methodological and epistemological issues, though without undermining his common sense as a psychologist. (He is the author of books in educational psychology.) The style of writing is comparable to Dewey's, with a terminology at times eccentric ("gnomic mind," "fractionations," "functionally inflected," etc.), all of which means that the tenor and intent of the subject-matter is not to be grasped by a quick, casual reading. But this survey, containing references to some eight hundred authors, does come to grips with important subject-matter, and will profit the patient reader. And it is not only a systematic survey of the whole field of psychology. It defends a thesis.

The thesis is what the author calls "methodological behaviorism." Starting, not with the "I-see-an-object" situation and its demand for an initial analysis of the self as a special sort of datum,

but rather with the more elementary and neutral "there-are-objects" situation including the items that are *eventually* identified as minded objects or "persons," the author proposes to call the items being examined and identified in their field of naïve experience the "x-systems," their examination and identification proceeding by means of their functional relations to certain "y-systems" in their environment; (e.g., Galileo's investigation of items relative to inclined planes, etc., such functionally fixed behavior entering into the very definition of "physical object"). In general, the items in the radically empirical situation eventually divide into three kinds under such treatment: physical, vital, and mental.

> If the relations are of such a character as to demand the exclusive use of words like extension, mass, inertia, specific gravity, substance, mechanical motion, and all the rest, such an object shall be called a physical object, and it can be identified as belonging to a physical order. It is only in this manner that the notion of physical order can achieve its experimental meaning. If the relations of x- and y-systems are of such a character as to demand the use, in addition to the terms noted above, of such words as growth, reproduction, irritability, conductivity, metabolism, and all the rest, such an object can be called a vital object, and be known as belonging to the living order. It is only in this manner that the notion of a *vital order* can achieve its experimental meaning. Likewise if the relations between situation and reaction are of such a character as to demand the use, in addition to all of the above, of the words acting, perceiving, attending, thinking . . . such an object can be known as belonging to the psychological order." [P. 490.]

By such a procedure a "functional" psychology is formulated, in contrast with what is here called the "gnomic" or content psychology derived from the I-see-an-object *point de départ*. Specimens of the latter sort are the structural, "existential," configurational (*gestalt*), analytic, or in general the "static" psychologies which have this in common, namely, that they speak of a field of given "contents" that are usually characterized as psychological or mental. The author does *not* reject wholesale the results of this procedure. He finds a place for the data or givens of sense, imagination, and memory. This place is not an "inner" one in contrast with the "external" world. It is *a portion of the environment* of the minded object or person, the psychological quality of "mindedness" belonging *not* to the data as such but to the x-system (person) responsive to them. The data themselves, examined and identified by the above behavioral technique, turn out to be neither mental nor physical, since *they* do not respond either as minded or as material elements to identifying y-systems. Such data or contents are directly accessible only by the subject in question, but are indirectly accessible to others, through the subject's verbal behavior and by what his behavior in general sug-

gests to the onlookers. Thus they are indirectly elements in the environment even of persons who do not "have" them as data. This notion of the environment as extended to include the data of sense, memory, and imagination without the latter themselves being either mental or physical, is one of the nicely conceived ones, and perhaps the most important in the book, from an epistemological point of view.

The position, in general, is an intelligent one between the extreme of reductionist, "physically inflected" psychologies including Watsonian behaviorism on the one hand, and the mentalistic subjectivism of the content psychologies on the other, while incorporating the strong points of each wing.

In one respect, the author, in his attempt to be "systematic," got off on the wrong foot, with his long general introduction to the "points of reference," ontological and methodological (Chs. III and IV). The abstract consideration, in this portion of the book, of such oppositions as mental-behavioral, existential-functional, analytic-configurational, static-genetic, together with random interpolations of such topics as "Philosophy and Science," "Psychology and its Cultural Relations," serve rather to bewilder than to assist the reader. These general categories are made more intelligible in subsequent parts, beginning with "Patterns of Points of Reference" (Ch. V), in which the various types of psychologies are examined. These are structuralism, Gestaltism, empirical behaviorism, functionalism, radical (Watsonian) behaviorism, physiological psychology, and psycho-analysis.

That an educational psychologist and professor of education should have written a book like this is as commendable as it is rare. It leaves the philosophers hoping that this spirit of inquiry will be infectious among the author's professional colleagues.

V. C. A.

Philosophy and the War. GUSTAV E. MUELLER. Oklahoma City: Harlow Publishing Corporation. 1943. 65 pp. $1.00.

This critique of Nazi philosophies is cleverly organized as a commentary on five important expositions of the theory of National Socialism, and by juxtaposing these various expositions, Professor Mueller makes evident how little ideal unity there is in the movement. These five spokesmen exhibit such radically different philosophical orientations and use such conflicting arguments that it is difficult to see how a literate Nazi could know what he is supposed to believe. Alfred Rosenberg's *Myth of the Twentieth Century* appeals to a mythical idealization of German blood as a basis for

a philosophy of history and of art. Otto Dietrich's *The Philosophical Foundations of National Socialism* is an attempt to prove that biological science leads to the conclusion that the individual can be an agent (i.e., can have freedom) only in so far as he shares in collective action. Walter Gross's *Racial-Political Education* is a pragmatic appeal, based on "the logic of power and fear," for education in fertility. Wilhelm Stapel's *The Christian Statesman* derives Nazi imperialism from the Christian Gospel and presents the true God as the God who will give the earth to "peoples of good blood." Franz Böhm's *Anticartesianism: German Philosophy in Resistance* tries to rescue German romanticism from its "denationalized" perversions in Kant, Hegel, and Marx and to restate it in its "unhistorical vitality."

Professor Mueller supplements his reviews of these books by an attempt to defend the doctrine of equality against Nazi ridicule, but this attempt seems to me of dubious political value since it rests on the doctrine that all men are equal only because they are "equally sinful in the eyes of God," and "equally in need of rational criticism."

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